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(71) Applicant (for all designated States except US): BOOKHAM TECHNOLOGY PLC [GB/GB]; 90 Milton Park, Abingdon, Oxon OX14 4RY (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): WALKER, Robert, Graham [GB/GB]; 30 Broadmead Avenue, Northampton, Northants NN3 2QY (GB). CARTER, Andrew, Cannon [GB/GB]; 32A Stoke Road, Blisworth, Northampton NN7 3BZ (GB).

(74) Agents: CLAYTON-HATHWAY, Anthony, Nicholas et al.; Fry Heath & Spence LLP, The Gables, Massetts Road, Horley, Surrey RH6 7DQ (GB).

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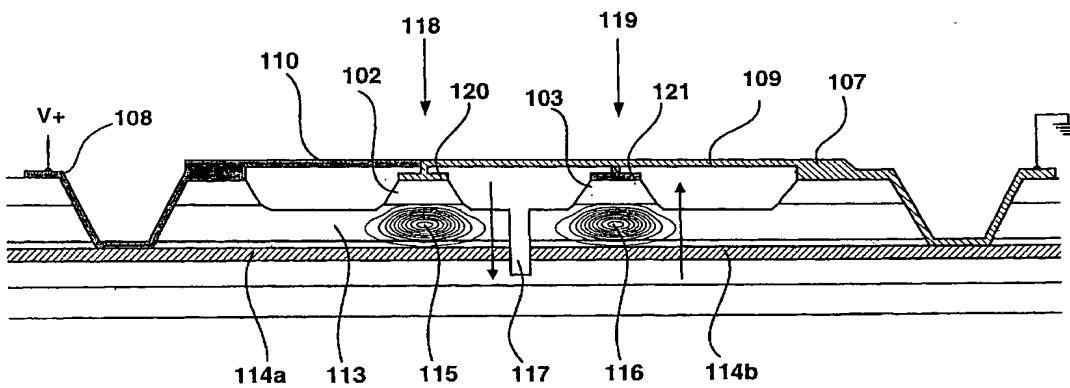
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(54) Title: OPTICAL MODULATORS OPERATED IN PARALLEL PUSH-PULL MODE



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(57) Abstract: A Mach-Zehnder interferometer modulator for modulating a beam of laser light includes a pair of separate waveguides (115, 116) through which the laser light is passed after splitting in a splitting zone and after which the light is recombined in a merge zone, the waveguides being formed of a material having electro-optic properties and there being provided opposed pairs of electrodes (120, 114a, 121, 114b) electrically located so as to be able to effect optical changes within the material of the waveguides. The waveguides are formed in a semiconductor material with one of the electrodes of each pair being formed in a doped layer (114), the doped layer being of relatively high conductivity compared to the semiconductor material, buried within or below the waveguide material whilst the other electrode, the top electrode (120, 121), is a surface metalisation. The doped layer is trenched (117) so that adjacent electrodes in the doped layer are electrically isolated from one another so that one of the electrodes in the doped layer (114a) can be connected with a different electrical polarity to the other electrode in the doped layer (114b) thereby permitting the connection of the pairs of electrodes in parallel anti-phase mode.